

What is claimed is:

[Claim 1] We claim as our invention:

1. A putter comprising:

a club head comprising

a face portion,

a sole portion extending rearward from the face portion,

an aft mass portion rearward from the face portion a

distance of between 2.5 inches to 4.5 inches,

a crown portion extending rearward from the face portion, the

crown portion having a central elongated section extending over the aft mass portion; and

a shaft connected to the club head;

wherein the putter has a swing static imbalance, S_y , greater than 500 grams–centimeter, the swing static imbalance defined as the product of the putter mass and the_offset distance of the center of gravity of the club head behind the golfer's hands along the target direction.

[Claim 2] 2. The putter according to claim 1 wherein the putter has a torsion swing inertia, I_{xz} , that has an absolute value greater than 10,000

grams–centimeter square, wherein the torsion swing inertia is defined as the product of inertia of the angular acceleration about the shaft axis and the angular acceleration about the swing axis.

[Claim 3] 3. The putter according to claim 1 wherein the putter has a center of gravity located at least 1.5 centimeters rearward from a shaft axis of the putter.

[Claim 4] 4. The putter according to claim 1 wherein the club head has at least 70 percent of its mass located in a center section.

[Claim 5] 5. The putter according to claim 1 wherein the face portion has a recess with an insert disposed therein.

[Claim 6] 6. The putter according to claim 1 further comprising a grip attached to the shaft.

[Claim 7] 7. The putter according to claim 1 wherein the club head further comprises a cylindrical rod extending upward from an external surface of the crown portion for engagement with the shaft.

[Claim 8] 8. The putter according to claim 1 wherein the putter has a club length ranging from 46 inches to 50 inches.

[Claim 9] 9. The putter according to claim 8 wherein the putter has a mass ranging from 730 grams to 775 grams.

[Claim 10] 10. The putter according to claim 1 wherein the putter has a club length ranging from 41 inches to 45 inches.

[Claim 11] 11. The putter according to claim 10 wherein the putter has a mass ranging from 665 grams to 700 grams.

[Claim 12] 12. The putter according to claim 1 wherein the crown portion further comprises alignment means.

[Claim 13] 13. The putter according to claim 12 wherein the alignment means further comprises a plurality of circular inserts.

[Claim 14] 14. The putter according to claim 1 wherein the club head is composed of a material selected from the group consisting of titanium alloy, titanium, stainless steel, carbon steel and bronze.

[Claim 15] 15. A putter comprising:

a club head comprising

a face portion,

a sole portion extending rearward from the face portion,

an aft mass portion rearward from the face portion a

distance of between 2.5 inches to 4.5 inches,

a crown portion extending rearward from the face portion, the

crown portion having a central elongated section extending over the aft mass portion; and

a shaft connected to the club head;

wherein the putter has a torsion swing inertia, I_{xz} , that has an absolute value greater than 10,000 grams-centimeter square, wherein the torsion swing inertia is defined as the product of inertia of the angular acceleration about the shaft axis and the angular acceleration about the swing axis.

[Claim 16] 16. The putter according to claim 15 wherein the putter has a center of gravity located at least 1.5 centimeters rearward from a shaft axis of the putter.

[Claim 17] 17. The putter according to claim 15 wherein the club head has at least 70 percent of its mass located in a center section.

[Claim 18] 18. The putter according to claim 15 wherein the face portion has a recess with an insert disposed therein.

[Claim 19] 19. The putter according to claim 15 further comprising a grip attached to the shaft.

[Claim 20] 20. The putter according to claim 15 wherein the club head further comprises a cylindrical rod extending upward from an external surface of the crown portion for engagement with the shaft.

[Claim 21] 21. The putter according to claim 15 wherein the putter has a club length ranging from 46 inches to 50 inches.

[Claim 22] 22. The putter according to claim 21 wherein the putter has a mass ranging from 730 grams to 775 grams.

[Claim 23] 23. The putter according to claim 15 wherein the putter has a club length ranging from 41 inches to 45 inches.

[Claim 24] 24. The putter according to claim 23 wherein the putter has a mass ranging from 665 grams to 700 grams.

[Claim 25] 25. The putter according to claim 15 wherein the crown portion further comprises alignment means.

[Claim 26] 26. The putter according to claim 25 wherein the alignment means further comprises a plurality of circular inserts.

[Claim 27] 27. The putter according to claim 15 wherein the club head is composed of a material selected from the group consisting of titanium alloy, titanium, stainless steel, carbon steel and bronze.

[Claim 28] 28. A putter comprising:
a club head comprising

a face portion,

a sole portion extending rearward from the face portion,

an aft mass portion rearward from the face portion a

distance of between 2.5 inches to 4.5 inches,

a crown portion extending rearward from the face portion, the

crown portion having a central elongated section extending over the aft mass

portion; and

a shaft connected to the club head;

wherein the club head has at least 70 percent of its mass located in

a center section.

[Claim 29] 29. The putter according to claim 28 wherein the putter has a center of gravity located at least 1.5 centimeters rearward from a shaft axis of the putter.

[Claim 30] 30. The putter according to claim 28 wherein the face portion has a recess with an insert disposed therein.

[Claim 31] 31. The putter according to claim 28 further comprising a grip attached to the shaft.

[Claim 32] 32. The putter according to claim 28 wherein the club head further comprises a cylindrical rod extending upward from an external surface of the crown portion for engagement with the shaft.

[Claim 33] 33. The putter according to claim 28 wherein the putter has a club length ranging from 46 inches to 50 inches.

[Claim 34] 34. The putter according to claim 33 wherein the putter has a mass ranging from 730 grams to 775 grams.

[Claim 35] 35. The putter according to claim 28 wherein the putter has a club length ranging from 41 inches to 45 inches.

[Claim 36] 36. The putter according to claim 35 wherein the putter has a mass ranging from 665 grams to 700 grams.

[Claim 37] 37. The putter according to claim 28 wherein the crown portion further comprises alignment means.

[Claim 38] 38. The putter according to claim 37 wherein the alignment means further comprises a plurality of circular inserts.

[Claim 39] 39. The putter according to claim 28 wherein the club head is composed of a material selected from the group consisting of titanium alloy, titanium, stainless steel, carbon steel and bronze.

[Claim 40] 40. The putter according to claim 30 wherein the insert is composed of a polyurethane material.